

Serial No.: 10/712,729
Reply to Office action of May 9, 2006

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Listing of the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the Application:

Claim 1. (Previously presented) A system for sintering a quartz tube, said quartz tube having a cylindrical wall defining an annular space and an outer layer of silica soot deposited on an outer surface thereof, said system comprising:

a) a furnace for heating said quartz tube to a temperature of at least 1400°C in a controlled atmosphere, said furnace having a heating zone in which said quartz tube is sintered;

b) a support rod assembly disposable in said annular space, said support rod assembly comprising: (i) a cylindrical support rod having a central portion, said central portion having a surface roughness of from about 0.1 micron to about 4 microns, wherein said central portion has an ovality of up to about 0.5 mm and a bow of up to about 0.7 mm/m along a longitudinal axis of said support rod assembly, wherein said cylindrical support rod has a coefficient of thermal expansion that is greater than a coefficient of thermal expansion of said quartz tube, wherein said support rod assembly is substantially chemically inert with respect to silica in an atmosphere comprising an inert gas and at least one of fluorine, chlorine, and combinations thereof at temperatures of at least 1400°C, and wherein said support rod assembly straightens and supports said quartz tube and prevents tapering of said inner diameter due to creep during sintering of the quartz tube; and (ii) at least one retaining portion coupled to at least one end of said cylindrical support rod for preventing slippage of said quartz tube from said support rod assembly; and

c) means for positioning said support rod assembly and said quartz tube within said heating zone.

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Claim 2. (Previously presented) The system according to Claim 1, wherein said central portion has an ovality of up to about 0.5 mm and a bow of up to about 0.7 mm/m along a longitudinal axis of said cylindrical support rod.

Claim 3. (Original) The system according to Claim 1, wherein said central portion comprises a carbonaceous material.

Claim 4. (Original) The system according to Claim 3, wherein said carbonaceous material comprises graphite.

Claim 5. (Original) The system according to Claim 4, wherein said graphite has been purified in the presence of chlorine gas.

Claim 6. (Original) The system according to Claim 4, wherein said central portion further includes a coating disposed on an outer surface of said central portion, wherein said coating comprises at least one of graphite deposited by chemical vapor deposition, amorphous carbon, and boron nitride.

Claim 7. (Previously presented) The system according to Claim 4, wherein said graphite has an ash content of less than 100 parts per million.

Claim 8. (Original) The system according to Claim 1, wherein said central portion comprises a cylindrical alumina core and a coating disposed on an outer surface of said cylindrical alumina core, wherein said coating comprises at least one of graphite deposited by chemical vapor deposition, amorphous carbon, and boron nitride.

Claim 9. (Original) The system according to Claim 1, wherein said central portion comprises a tubular structure.

Claim 10. (Original) The system according to Claim 1, wherein said central portion comprises a solid rod.

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Claim 11. (Original) The system according to Claim 1, wherein said central portion has an outer diameter from about 15 mm to about 50 mm.

Claim 12. (Previously presented) The system according to Claim 1, wherein said central portion has a length from about 750 mm to about 1500 mm.

Claim 13. (Original) The system according to Claim 1, wherein said quartz tube has an inner diameter and said central portion has an outer diameter, and wherein said inner diameter differs from said outer diameter by up to about 0.1 mm over the length of said central portion.

Claim 14. (Original) The system according to Claim 1, wherein said at least one retaining portion comprises a coupling for engaging said means for positioning and at least one of a first end of said quartz tube and an end of said cylindrical support rod.

Claim 15. (Original) The system according to Claim 14, further including a second retaining portion affixed to a second end of said cylindrical support rod and distal to said coupling.

Claim 16. (Original) The system according to Claim 1, wherein said positioning means comprises a rod, wherein said rod is one of a quartz rod and a graphite rod, and wherein said positioning means is coupled to an external support structure.

Claim 17. (Original) The system according to Claim 16, wherein said positioning means further includes a drive system coupled to said rod, wherein said drive system is capable of moving said quartz tube and said support rod assembly through said furnace.

Claim 18. (Original) The system according to Claim 1, wherein said positioning means comprises a drive mechanism coupled to said furnace, wherein said drive

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mechanism is capable of moving said furnace relative to a longitudinal axis of said quartz tube.

Claim 19. (Original) The system according to Claim 1, wherein said system is adapted to sinter a quartz fiber optic sleeve tube.

Claim 20. (Original) The system according to Claim 1, wherein said controlled atmosphere comprises helium and at least one of and chlorine, fluorine, and combinations thereof.

Claims 21. - 71 (Cancelled)